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"THE PIORKOWSKI LABORATORIES" OF ST. LOUIS.

CONVICTED OF SELLING BIOLOGIC PRODUCTS WITHOUT A LICENSE.

In January, 1914, information was received that a St. Louis, Mo., concern, operating under the name of "The Piorkowski Laboratories," was selling so-called turtle tuberculin in interstate traffic without having a license, as required by the act of Congress of July 1, 1902, regulating the sale of viruses, serums, etc.

Evidence to this effect was collected, and a criminal information filed under the direction of the Solicitor of the Treasury in the district court at St. Louis, Mo., against Leslie A. Knight, the party using the name "The Piorkowski Laboratories."

On November 27, 1914, the defendant pleaded guilty to having made a shipment of so-called turtle tuberculin in violation of the law, and was fined \$100 and costs.

TRACHOMA IN THE SCHOOLS OF PORTO RICO.

By W. W. KING, Surgeon, United States Public Health Service, Member Institute of Tropical Medicine and Hygiene of Porto Rico.

The discovery of cases of trachoma among school children in various places in Porto Rico, and the report of its presence in 15½ per cent of 600 persons examined at the clinic of the Institute of Tropical Medicine and Hygiene, at Utuado, brought this disease into considerable local prominence and discussion. Seemingly there existed conditions which demanded attention, but to undertake systematic measures looking to prevention, control, and eradication, it was evident that more knowledge of its prevalence and other facts was necessary.

At the request of the governor and the director of sanitation, I undertook further investigation of the subject, particularly as affecting school children, with the results herein given.

Object of the Survey.

It was desired first to determine whether the disease was limited to certain localities or widely spread; to gain an approximate idea of the percentage of school children who were sufferers from it, and to ascertain the prevailing types and other epidemiological factors influencing its spread, in order to formulate plans to combat it.

A more extensive survey was planned, but circumstances and the lack of time before the close of the school year curtailed the number of places and schools visited.

Schools visited.

| Name of school. | Town or district. | Number examined. | Positive cases | Per cent. | Suspicious cases. | Per cent. |
|------------------------------------|-------------------|------------------|----------------|-----------|-------------------|-----------|
| Central High..... | San Juan..... | 274 | 22 | 8.0 | 14 | 5.1 |
| Central Grammar..... | do..... | 415 | 47 | 11.0 | 17 | 4.0 |
| San Juan No. 1..... | do..... | 1,034 | 135 | 13.0 | 104 | 10.0 |
| Lincoln..... | Aibonito..... | 184 | 8 | 4.3 | 5 | 2.7 |
| Brumbaugh..... | do..... | 213 | 10 | 4.6 | 6 | 2.8 |
| McKinley..... | Ponce..... | 968 | 82 | 8.4 | 18 | 3.9 |
| Columbia..... | Fajardo..... | 389 | 19 | 4.8 | 18 | 4.6 |
| Belaval..... | do..... | 351 | 15 | 4.2 | 4 | 1.1 |
| Martin Gonzalez ¹ | Carolina..... | 70 | 4 | 5.7 | 2 | 2.8 |
| Juan Gonzales ¹ | Rio Grande..... | 29 | 0 | 0.0 | 0 | 0.0 |
| Tijeras ¹ | Juana Diaz..... | 24 | 5 | 20.8 | 5 | 20.8 |
| Town schools ² | Utuado..... | 39 | 8 | 20.5 | 4 | 10.2 |
| Rural schools ^{1,2} | do..... | 72 | 21 | 29.1 | 3 | 4.6 |
| Beatriz ¹ | Cidra..... | 25 | 1 | 4.0 | 1 | 4.0 |
| Beatriz ¹ | Cayey..... | 15 | 1 | 6.6 | 0 | 0.0 |
| Beatriz No. 1 ¹ | Caguas..... | 16 | 0 | 0.0 | 2 | 1.2 |
| Beatriz No. 2 ¹ | do..... | 25 | 2 | 8.0 | 1 | 4.0 |
| Coto Laurel ¹ | Ponce..... | 45 | 19 | 42.2 | 5 | 11.1 |
| Town schools ² | Mayaguez..... | 14 | 2 | 14.2 | 2 | 14.2 |
| | | 4,202 | 401 | 9.5 | 231 | 5.4 |

¹ Rural schools.

² Pupils from various schools.

Diagnosis.

A diagnosis of trachoma was made in those cases showing a well-defined granulation accompanied by hyperplasia of the conjunctiva.

Cases of acute or subacute conjunctivitis and those presenting indefinite granulation with or without congestion, superficial granulation, and border-line cases were classed as "suspicious." It is probable that a goodly number of these suspicious cases were trachoma of mild character or in the very early stages. This view seems to be strengthened by the fact that in many instances these persons were members of families in which positive cases were found.

Percentage.

It will be noted that the percentage of infection in different schools shows wide variation, ranging from nothing to the extremely high figure of 42.2, an inequality probably due to the length of time that the disease has been present in the neighborhood or to local factors very difficult or impossible to determine.

It is believed that the number of pupils and the variety of localities were sufficient to make the general average of 9.5 a fairly accurate index to the amount of infection in the schools throughout the island, although it is possible that further inspections may somewhat modify it. The number examined at Mayaguez was too small to give a reliable index for that city, but at least the presence of trachoma at that point was established. A more extensive inspection might change the local average, but would not materially affect the general result.

Accepted as a tentative working figure, this average means that of an enrollment of 182,766 pupils during the past school year 17,435 had trachoma, without considering 10,000 others who had symptoms that were suspicious and therefore well deserving attention. These figures give an idea of the gravity of the situation and the difficulties which must be confronted in dealing with it.

Distribution.

Probably few schools in Porto Rico are free from the disease. It is very unlikely that the localities visited chanced to be the principal ones infected; and if they may be taken as representative of their section, it is reasonable to suppose that the intervening places are also in more or less the same condition. It seems safe, therefore, to say that trachoma is prevalent in all parts of Porto Rico, though varying in intensity.

An attempt to trace any influence to general topographical features results negatively from these examinations, the average for the coast lowlands being 8.6 per cent and that for the mountainous interior but little higher—9.7 per cent. High percentages as well as low ones were found under both conditions.

A comparison between town and rural schools shows quite different findings—8.9 per cent in the former against 16.5 per cent in the latter. These rates must, however, be considered with the knowledge that a disproportionately small number of rural schools were visited, this being one of the principal points in which the survey was not completed. Two heavily infected centers—Utuado and Coto Laurel—were encountered, and it remains to be seen if this heavy ratio of infection will be sustained in future inspections.

Type of the Disease.

Except in a comparatively small number of the severely infected, nearly all denied having felt "anything in the eye." Probably many did not, and others were at an age when they could not easily express their feelings. The symptoms of chronic trachoma may give little trouble and are often unnoticed until attention is directed to them by the examining physician. Careful questioning elicited in many instances an admission of having had one or more of the following symptoms: Burning, itching, reddening of the lid margins or eyeball, sensation of grit beneath the lids, lachrymation, photophobia, lashes stuck together in the morning, muco-purulent secretion at the inner canthus, etc. Not many admitted having had acute attacks, but children are prone to forget, and I have found that frequently such history can be had from parents when denied by the child.

These cases presented every gradation of granulation from a few elevations along the tarsal margin to the abundant crowded masses filling every bit of space in the conjunctiva in both lids of both eyes.

A moderate amount of medium-sized granulations along the tarsal margin and in the superior cul-de-sac was the rule. No attempt was made to classify them into papillary or follicular form. Both forms were seen, but the majority were mixed in varying degree.

In somewhat more than half the number, the inferior conjunctiva was involved, sometimes to a greater degree than the superior, but in only one or two cases was it limited to the lower lid. Usually both eyes were about equally affected, but it was not uncommon to see a marked difference in the amount of granulation. In about 1 per cent one eye only appeared trachomatous, the other being normal or so nearly normal that taken alone no suspicion of trachoma would be aroused. Such cases emphasize the liability of error when only one eye is examined.

Very thick, stiff lids, so characteristic of long-standing cases, were seldom seen. Scar tissue, generally as fine lines, was more often noted, but not in the majority of cases, probably because that stage of the disease had not yet been reached.

In the course of these examinations other inflammatory conditions of the conjunctiva were found which may be roughly divided into several groups:

(1) Acute and subacute conjunctivitis, not many in number. Not infrequently there were observed chronic cases presenting marked injection of the conjunctival vessels of lids and eyeball, increased secretion, burning, itching, and slight photophobia. The conjunctiva was moist and clear, without thickening or granulation except rarely a few very fine papillary points. Blepharitis with frequent sties was a very common history. These cases could hardly be mistaken for trachoma, hence have not been included under the term "suspicious."

(2) Cases showing nothing but a few, usually small, elevations along the tarsal margin with little or no congestion about them.

(3) Those with only a small patch of smooth, rounded elevations in the cul-de-sac, or more especially in the outer corner of the lower lid. It is often difficult to determine whether they are true granulation or simply folds of redundant tissue.

(4) Those having large or small semitransparent, soft, flabby-looking discrete granules so superficial that they appear to rest upon the conjunctiva. Fine blood vessels passing under them can be distinctly seen.

(5) Those border-line cases in which only repeated observation under treatment can settle the diagnosis.

Complications and Accompanying Conditions.

Owing to the scarcity of cases of long standing, complications were comparatively rare. Ptosis was noticed three times; sty, twice;

and the following conditions, once each: Marked astigmatism, small corneal opacity, ptosis and keratitis, keratitis, symblepharon, blepharitis, beginning pterygium, episcleritis, and strabismus. Two of the suspicious cases had blepharitis with sty.

Damage to Vision.

This can be said to have occurred in only three cases worthy of mention.

That more cases of damaged vision were not encountered is to be explained by the fact that trachoma progresses slowly, as a rule, and it is hardly to be expected that many school children had had it a sufficient time for serious effects to supervene.

Age.

| Age in years. | Number examined. | Positive cases. | Per cent. | Suspicious cases. | Per cent. |
|---------------|------------------|-----------------|-----------|-------------------|-----------|
| 4..... | 1 | | | | |
| 5..... | 44 | 2 | 4.5 | 2 | 4.5 |
| 6..... | 92 | 10 | 10.8 | 9 | 9.7 |
| 7..... | 167 | 16 | 9.5 | 9 | 5.4 |
| 8..... | 214 | 18 | 8.4 | 14 | 6.5 |
| 9..... | 260 | 32 | 12.3 | 15 | 5.7 |
| 10..... | 375 | 29 | 7.2 | 20 | 5.3 |
| 11..... | 347 | 38 | 10.9 | 22 | 6.3 |
| 12..... | 521 | 76 | 12.6 | 34 | 6.5 |
| 13..... | 503 | 45 | 8.9 | 24 | 4.7 |
| 14..... | 535 | 55 | 10.5 | 36 | 6.7 |
| 15..... | 449 | 42 | 9.3 | 20 | 4.4 |
| 16..... | 304 | 17 | 5.5 | 10 | 3.2 |
| 17..... | 190 | 16 | 8.4 | 7 | 3.6 |
| 18..... | 119 | 3 | 2.5 | 7 | 5.9 |
| 19..... | 53 | 3 | 5.7 | 2 | 3.8 |
| 20..... | 18 | | | | |
| 21..... | 7 | 1 | 14.3 | | |
| 22..... | 1 | | | | |
| 23..... | 1 | | | | |
| 25..... | 1 | | | | |
| Total... | 4,202 | 401 | | 231 | |

Extreme accuracy in obtaining the exact age was not attempted, nor was it necessary. The statements of the pupils were accepted or, in case they did not know, the apparent age was noted.

The percentages show no marked variation from the general average except in one instance where the number examined was very small. Age would therefore seem to have little influence within the limits of school age.

Sex.

| Sex. | Number examined. | Positive cases. | Per cent. | Suspicious cases. | Per cent. |
|--------------|------------------|-----------------|-----------|-------------------|-----------|
| Males..... | 2,159 | 257 | 11.9 | 126 | 5.8 |
| Females..... | 2,043 | 144 | 7.0 | 105 | 5.1 |
| Total... | 4,202 | 401 | | 231 | |

The sexes were nearly equally represented, 51.1 per cent and 48.9 per cent, yet males show 4.9 per cent greater prevalence. Girls are less promiscuous in their associates than boys and are instinctively more cleanly and of better personal habits, hence it is reasonable to suppose that these two important factors may explain the difference.

Color.

Every gradation, from pure Caucasian to pure African, occurs in Porto Rico, resulting from every degree of mixture of the two races. Traces of aboriginal Indian blood are seen in many faces, especially in the interior, but no pure Indian remains. It has not been taken into account in these statistics.

It was impossible to fix a definite line of demarcation of color, the classification here given being that of the most prominent characteristics. In the school records only the distinction of "white" and "colored" is made.

During the first part of the examination of the San Juan schools the lists of pupils examined were left with the teachers to supply the data as to age, sex, and color, and it was not noticed until too late for correction, that, with the exception of one room, the distinction between "mulatto" and "negro" was not made. In the following table it thus became necessary to make a separate class of "colored" for the other pupils of the San Juan No. 1 and the Central Grammar Schools.

Color.

| Color. | Number examined. | Positive cases. | Per cent. | Suspicious cases. | Per cent. |
|--------------|------------------|-----------------|-----------|-------------------|-----------|
| White..... | 2,525 | 231 | 9.1 | 149 | 5.9 |
| Mulatto..... | 921 | 90 | 9.7 | 33 | 3.6 |
| Negro..... | 271 | 15 | 5.5 | 9 | 3.3 |
| Colored..... | 485 | 65 | 13.4 | 40 | 8.2 |
| Total .. | 4,202 | 401 | | 231 | |

No reason is apparent for the difference in percentage between colored (13.4) and mulatto and negro combined (8.8).

The percentages between white and mulatto are practically the same. Negroes give a somewhat lower rate but remarkably higher than that found by Oakley, Moore, and Kolb in Kentucky (0.09 per cent), Clark in Virginia and West Virginia (0.08 per cent), and Foster in North Carolina and South Carolina (0.04 per cent). Schereschewsky also has stated that he has rarely found the disease in negroes.

These observers have apparently made no distinction between negro and mulatto but have classed them as "colored," in accord-

ance with custom in the United States. If there is a difference in susceptibility between whites and negroes, it would seem that a study of the effect of the mixture of the two races would prove interesting and profitable.

What is the cause of this very great difference of findings in the United States and Porto Rico? The causative organism of trachoma is still a matter of controversy and can not settle the diagnosis of doubtful cases. Experienced examiners may differ as to diagnosis in certain cases, but it is improbable that officers trained in the same school of experience—the United States Public Health Service—could differ so widely in diagnosis as is shown by the percentages of infection in negroes in the United States and Porto Rico.

A more plausible but only partially sufficient reason may be found in the difference in the relations existing between these races in the two countries. Contrary to the custom in the States above mentioned the color line in Porto Rico is very loosely drawn, the people of every color intermingling freely in the schools, churches, theaters, and other public places, and in certain social classes there is but little distinction made. The sanitary conditions under which the negro race lives do not materially differ in the two countries.

The more intimate association naturally affords greater chance for the interchange of disease, but seems insufficient to explain the figures under discussion, as the difference in percentage of infection is much greater than the difference in degree of intimacy in the two places. In the absence of other epidemiological factors of importance, we must suppose that the negro race is less susceptible to trachoma than the white race, but that this partial immunity is lost by amalgamation of the two. Such conclusions seem to be indicated by the result of these examinations.

Social Grade.

The ratio of the incidence of trachoma in the different social strata can not be expressed in figures. In the beginning of this work an endeavor was made to divide the pupils into 3 or 4 grades on this basis, but it had to be abandoned as impracticable. There being no natural definite lines of division, any arbitrary standard was open to serious objection.

However, some observations were made especially demonstrating the falsity of the belief held by many persons that trachoma in Porto Rico is a disease of the poorer or lower classes. It was surprising to see the number of cases encountered in children of wealthy or at least well-to-do families of high social position, and this fact should be emphasized because of the frequently heard expression of the above opinion.

Children are notoriously careless in matters of personal hygiene, and on account of their essentially democratic nature do not draw social distinctions, particularly in play, as strictly as do their elders. In school they meet children of all kinds. They also have more intimate contact with servants. In such ways children living under apparently the best hygienic conditions may have rather extensive opportunities for contracting trachoma.

Nationality.

No effort was made to record the nationality of those examined, as all but a small fraction were Porto Ricans. Included in the remainder were children of American, Spanish, French, English, Danish, German, Italian, Venezuelan, Dominican, Syrian, West Indian, and possibly other parentage, most of whom were born in Porto Rico.

At the time of the transfer of Porto Rico from Spanish to American authority many of the people retained their Spanish citizenship, especially those who were born in Spain. The majority of the French are Corsican families, who have resided in Porto Rico for a considerable number of years, hence the children of these Spanish and French parents may be considered in the same category as Porto Rican children in so far as this investigation is concerned.

The same may be said to be true in more or less degree with regard to children of other nationalities, except American and those of people from the English-speaking islands to the eastward of Porto Rico. These elements have been introduced since the American occupation and many of the children are Porto Rican born.

The West Indian element is largely pure negro, and no case of trachoma was found among them. On the other hand, some cases were found in American children. In this connection it may be stated that of the total number of 632 positive and suspicious cases, apparently none were imported. There were no persons included in this number but those who had lived in the island longer than the apparent duration of their conjunctival disease.

Origin of Trachoma in Porto Rico.

Sufficient data is not at hand to throw much light upon this question, nor could an inspection of school children be expected to furnish much information. It is very evident that trachoma has existed in Porto Rico long enough to become widespread even to the remotest parts. Among the patients at the clinic of the Institute of Tropical Medicine and Hygiene at Utuado I found adults from isolated mountain districts with cases of trachoma in which the pathological conditions, as well as the patient's statements, gave evidence of trachoma of many years' duration.

Blame for the introduction of trachoma has been placed upon the Syrians. In the medical inspection of immigrants by the United States Public Health Service at Porto Rican ports since the American occupation many Syrians have been rejected for this cause.

They are usually shopkeepers and peddlers in many West Indian and South American lands, and prior to the American occupation were accustomed to penetrate into all parts of Porto Rico selling their wares. It is not unreasonable to suppose that they unconsciously peddled trachoma at the same time, yet their numbers were comparatively few and it is probable that they may be less blameworthy than has been claimed.

Spanish immigrants and soldiers come in for a larger measure of responsibility. The disease is prevalent to an undetermined degree in Spain, and in the constant stream of Spanish immigration there undoubtedly were many persons afflicted with trachoma. Spanish garrisons were constantly maintained in the island and the result of several thousand soldiers mingling with the populace must have been an important factor in the introduction of this disease.

Although practically no notice was taken of it until recently, it is evident that trachoma was introduced into Porto Rico during the Spanish régime, and probably through several channels.

Dissemination.

Following its introduction, various causes have been at work to spread it. Considering that the infecting organism is present in the secretions of the trachomatous eye, one can readily imagine the various ways in which it may be transferred from person to person. The use in common of towels, handkerchiefs, wash basins, clothing, books, pencils, and other objects in the home, school, or workshop may be mentioned. Persons ignorant or negligent about personal hygiene are of course more liable to contract the disease, especially when living under conditions of poverty, uncleanliness, crowding, and unhygienic circumstances generally.

The fly and maybe other insects must not be overlooked. Their predilection to alight upon the face and eyelids is well known, particularly if attracted by the presence of a purulent discharge. From the inflamed eye to a sound one is often a short flight.

The topography of a country influences the transmission of trachoma by its effect upon the means of communication, habits, pursuits, etc., of the people. Porto Rico presents two general topographical features—a strip of fairly level coast land of varying width, sometimes extending by valleys some distance from the sea, and a mountainous interior with an elevation 1,000 to 2,500 feet, broken by numerous irregular ridges and valleys. It has been likened to a choppy sea.

The entire island is traversed in all directions by roads and trails, so that while communication may be more difficult in some parts than in others, no localities can be said to be really isolated. Distances are comparatively short, and as a matter of fact all sections are in constant and free intercommunication. The people are practically homogeneous, and, class for class, the differences in habits, occupation, dress, etc., are so slight that they have little or no bearing upon the question under discussion.

While it is evident that trachoma has been existent in Porto Rico for a long time and well scattered throughout its extent, information is totally lacking in regard to the ratio of infection and rate of spread. That the increase in the number of cases has been more rapid of late years seems probable and logical. The large number of new roads opened up in the last 15 years has rendered communication easier and increased prosperity has supplied motive and means for greater movement.

Far more important has been the rapid and enormous expansion of the school system from an enrollment of about 26,000 in 1899 to 182,766 in 1913-14. Thousands of children who would have scarcely seen each other were thus brought into close association with a minimum or absence of medical supervision except in regard to the usual contagious diseases, smallpox, measles, scarlatina, etc. The danger of transmission of trachoma in the school should not be exaggerated, neither should it be minimized, and it is hardly supposable that such multiplication of opportunities for exposure should have occurred without the logical consequence of more rapid dissemination of the disease.

Remembering that the secretions of the trachomatous eye are infective, it is easy to understand why the intimate association between members of a family, particularly children with each other, affords the most favorable opportunities for infection. Therefore it was no surprise to find a number of instances of more than one case in the same family. One wealthy and prominent family gave 3 well-developed cases. Another family, not included in these statistics, consisting of 9 children from 2 to 13 years of age, showed 7 with undoubtedly trachoma, a suspicious condition in the next to youngest child, and negative in the baby. In such families it is usual to find the further advanced cases in the older children.

Illustrative of infection contracted from parents was a family seen at the clinic at Utuado. The mother had a very old trachoma with much thickening and scar tissue. Two children, aged 11 and 9, had less advanced cases, and the other children, aged 7, 6, and 5, were negative.

Prevention.

The proverb "an ounce of prevention is worth a pound of cure" is truly applicable to trachoma. Once contracted and developed, it is very difficult to cure. Treatment is painful, tedious, and wearing upon the endurance of both physician and patient; hence is too often abandoned before complete cure is attained.

Protection against it is more a matter of individual personal hygiene than of general measures. A person may live under the best hygienic surroundings and still be very negligent in his personal habits, due to ignorance or carelessness. Children are naturally careless and thoughtless and unless taught personal hygiene will grow up in ignorance of some of its more essential features. The time for beginning this instruction is infancy. It can hardly be said that any age is too early.

The individual towel and individual handkerchief are as essential if not more so than the individual toothbrush, the necessity of which everyone recognizes. This exclusiveness in such things should be cultivated to the point of seeming absurdity. It is safer to be over rather than under scrupulous in these matters. Young children learn first by imitation, later by precept as well, and before the mother or nurse realizes the child will notice that certain articles are reserved for its exclusive use and will want them.

As the careless and indifferent age is reached, constant admonition and example should keep these hygienic observances before the mind of the child until they become habits. Habits formed in childhood endure with remarkable tenacity. Lapses will occur, but in proportion to the attention given personal hygiene the danger of infection will decrease.

By the intelligent cooperation of the teacher the school can give powerful aid, supplementing the home training or supplying it when lacking. Instruction on these points might be incorporated in the studies on hygiene, but would probably be more effective if made a special subject presented to the pupils in different ways and on different occasions as a matter having particular interest and importance to them individually rather than a routine study of general application. It is not possible here to go into details as to what should be included in such instruction.

General sanitary measures are of benefit indirectly, but at the same time may be of considerable importance. Special mention may be made of the eradication of flies. Conveyance by this means can scarcely be questioned and is important according to the number of flies present.

Treatment of existing cases not only gives relief to the sufferers but adds protection to the uninfected by reducing the number of sources of infection.

General isolation is, of course, impossible; still, restrictive measures can and should be taken with those in an acutely infective stage. Proper treatment should be instituted, their association with other persons limited as far as circumstances permit, and they and those necessarily in intimate contact with them instructed in the precautions to be observed.

Early and apparently insignificant attacks of "sore eyes" (ceguera) should not be neglected. By no means are they all a beginning trachoma, but they may be. The cases designated "suspicious" deserve attention for the same reason.

It is sometimes difficult to determine the amount of danger from a trachomatous patient, but as the discharge from the affected eye is the vehicle of the contagion, the amount and character of the secretion may be taken as a rough index to it. Almost anyone regards an acutely inflamed eye as possibly contagious, but while trachoma is prone to acute attacks the eye may be infective without outward signs of disease. Cases with exuberant granulation may be dangerous from time to time, due to the trachomatous "granule" rupturing and extruding its contents, which are carried away by the secretion. This secretion is often seropurulent, but may be so slight as to pass unnoticed in a hasty superficial examination.

Exclusion from the schools or segregation of all trachomatous pupils is the natural impulse and is unquestionably proper and valuable. When dealing with such numbers as are involved in Porto Rico, certain difficulties may be encountered and opposition met with, due to failure to appreciate the gravity of this disease and its results.

The excluded child is still a focus of infection to the family and to the community at large and should be under supervision. While some cases should be kept from school, to exclude all and attempt supervision over them would be a herculean task, especially in the face of opposition, and by possible failure might defeat the end in view. Perhaps better control and better results might be attained by allowing all those not actively contagious to attend school provided that the danger from their presence be minimized by requiring them to undergo treatment and by insisting upon the observance of precautions by all pupils.

Conclusions.

1. Trachoma is prevalent in practically all parts of Porto Rico, especially among school children.
2. The degree of prevalence is high, although it varies in different localities.

3. It has been existent in Porto Rico for many years and was probably introduced through various channels at different times.

4. It has spread more rapidly of late years, and the rate of spread will become still more rapid as time goes on unless measures are taken to control it.

5. On account of the serious effects of the disease, it becomes a public-health problem of great gravity and difficulty, demanding urgent measures for control and prevention.

6. This condition of affairs will not improve if let alone, but will steadily become worse unless efficient work is done against it. In the light of our present knowledge of trachoma, there is no quick and easy method of fighting it. A campaign against it may be compared to that against tuberculosis and means organized effort, trained workers, and the expenditure of energy and money for many years.

7. Suspicious cases deserve equal consideration with positive ones because a certain number of them are undoubtedly trachoma and may be sources of infection. Also, because trachoma is more amenable to treatment in the earlier stages.

8. The topographical features of the country have apparently had no influence upon the disease in Porto Rico.

9. Trachoma seems more prevalent in rural districts than in town, but this observation needs confirmation by more extended investigation.

10. Age within school limits has no influence.

11. Males are more frequently affected than females.

12. Negroes apparently enjoy a partial racial immunity, although the percentage of occurrence among them is remarkably higher in Porto Rico than is reported in the United States.

13. This immunity is apparently lost by mixture with white or Indian blood.

14. Trachoma is not limited to the poorer classes of society in Porto Rico, but affects those of higher social grade to a surprising degree.

A NEW BACTERIAL DISEASE OF RODENTS

TRANSMISSIBLE TO MAN.¹

By WILLIAM B. WHERRY, M. D., Professor of Bacteriology, University of Cincinnati.

Three years ago, while working in the Federal Laboratory at San Francisco on the distribution and epidemiology of plague among the California ground squirrels, McCoy (McCoy, Geo. W.—Public Health Bulletin No. 43, April, 1911) encountered a disease of these rodents which was of particular interest in that the lesions in ground squirrels, guinea pigs, white rats, and gray mice rather closely simulated

¹ Submitted for publication Dec. 8, 1914.